

# Perception and dental fear toward dental treatment among Saudi population who received Coronavirus disease-19 vaccine

**To Cite:**

El-Rashid A, Albarkheel H, Abahussain S, Abahussain F, Alhassoun A. Perception and dental fear toward dental treatment among Saudi population who received Coronavirus disease-19 vaccine. Medical Science, 2021, 25(117), 2987-2997

**Author Affiliation:**

<sup>1</sup>Assistant professor, Restorative Department, Riyadh Elm University, Riyadh, Saudi Arabia

<sup>2</sup>Bachelor of Dental Sciences Student, College of Dentistry, King Saud bin Abdulaziz University for Health and Sciences, Riyadh, Saudi Arabia

<sup>3</sup>6<sup>th</sup> Year Students, College of Dentistry, King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia

**Corresponding author**

Bachelor of Dental Sciences Student, College of Dentistry, King Saud bin Abdulaziz University for Health and Sciences, Riyadh, Saudi Arabia

Email: hadeelmalbarkheel@gmail.com

**Peer-Review History**

Received: 08 October 2021

Reviewed & Revised: 09/October/2021 to 10/November/2021

Accepted: 11 November 2021

Published: November 2021

**Peer-review Method**

External peer-review was done through double-blind method.

**Afra El Rashid<sup>1</sup>, Hadeel Albarkheel<sup>2✉</sup>, Sadeem Abahussain<sup>2</sup>, Fai Abahussain<sup>3</sup>, Arwa Alhassoun<sup>2</sup>**

**ABSTRACT**

**Aim:** To assess the perception and fear of Saudi population who took COVID-19 toward dental treatment. **Methodology:** A cross-sectional pilot questionnaire study with 32 questions was distributed from 18 June, 2021 till 30 June, 2021 via social-media platforms. In addition, the inclusion criteria were Saudi, above 18 years old, and who took COVID-19 vaccine. A questionnaire included sociodemographic data, COVID-19 fear scale, dental clinic avoidance structured questions, and perception scale. After developing and translating the questionnaire into Arabic, Google Form was used to create an anonymous, self-administered web-based survey. For the categorical variables, descriptive statistics of frequency distribution and percentages were calculated using SPSS. **Result:** A total of 580 participants completed the survey; however, 48 were excluded because they did not fit with our inclusion criteria. In regard to the fear of COVID-19, majority of male disagree with the fear of COVID-19 statements and have less fear than female ( $P<0.05$ ). Yet, in one statement Q4 people with higher income were more afraid to lose their life ( $P<0.05$ ). Furthermore, Educational-level and income were two variables that showed a significant relationship with  $P=0.05$  in terms of perception. **Conclusion:** Fear scale after getting the vaccine is becoming less and people started seeking dental treatment with different concerns other than pain or emergency. Educational-level and income were the cause of different perceptions in participants. Although participants with postgraduate education mainly agree that dental office has strict disinfection route, but the dentist can get and transmitted COVID-19 from/ to the patient.

**Keywords:** COVID-19, perception, dental fear, dental treatment, COVID-19 vaccine.

**1. INTRODUCTION**

In early 2020, the world has undergone a huge spread of coronavirus disease 2019 (COVID-19), which is thought to have originated in Wuhan, China. The World Health Organization (WHO) classifies coronavirus as a pandemic on March 11, 2020. As of December 1, 2020, the disease is estimated to have

impacted about 62.66 million people worldwide (Farsi and Farsi, 2021). COVID-19 has a wide clinical spectrum, ranging from asymptomatic cases with mild symptoms such as headaches, sore throats, and nasal congestion to more serious clinical signs and symptoms like coughs, myalgia, fevers, dyspnea, severe pneumonia with failure of the respiratory system, and even death. Individuals with comorbidities like cardiovascular disease, chronic obstructive pulmonary disease, hypertension, and diabetes are at a higher risk of progressing to severe disease and being admitted to the intensive care unit. COVID -19 has been found to cause cardiovascular injury such as myocardial infarction (Martina et al., 2021).

COVID-19 is highly infectious and has a high transmissibility rate due to the high number of COVID-19 positive individuals who have no or mild symptoms, making it difficult to diagnose (Martina et al., 2021; Moffat et al., 2021). People are too afraid to visit public places, including medical and dental hospitals, due to their fear of COVID-19 rapid transmission (Guo et al., 2020). Direct transmission via cough, droplet inhalation, and sneeze, as well as contact transmission via oral, eye, and nasal mucous membranes, are the most common modes of transmission. Moreover, saliva can transmit the COVID-19 directly or indirectly. According to research, Covid-19 may become airborne via aerosols formed during medical procedures. The aerosols which are typically generated during the dental procedures can contain saliva or blood particles posing the risk of large-scale virus transmission. During the pandemic's early stages, more strict measures have been called although dental clinics regularly perform strict infection control measures (Farsi and Farsi, 2021).

The virulence and lethality of COVID-19 are the two main factors that can cause high levels of fear and anxiety. Previous research has found that negative emotions such as dental fear and anxiety are associated with a decreased frequency of dental visits. Dental aversion leads to an increase in the prevalence of caries and a deterioration in oral health -related quality of life. Previous study conducted in 2021 on Madrid show that, the people will avoid the dental care till an effective drug or vaccine for COVID -19 is found (González-Olmo et al., 2021). Vaccine Tracker tracks all registered clinical trials for the development of a viable COVID-19 vaccine that are taking place around the world. According to a more recent review published in early 2020, approximately 158 COVID-19 vaccine candidates have already been identified and are being investigated. One hundred and thirty of those vaccine candidates have already entered the preclinical or exploratory stage. A potential vaccine must go through several stages of clinical trials to validate its safety and efficacy according to US Food and Drug Administration (FDA) guidelines (Felemban et al., 2021).

Pfizer (BioNTech) and Oxford (AstraZeneca) are an example of major vaccines that have been approved and implemented in various countries. KSA planned to provide COVID-19 vaccination to its population as soon as a safe and effective vaccine became available as part of its ongoing efforts to combat the pandemic. On the same day that the phase III trial of the vaccine was published, the Saudi Food and Drug Authority (SFDA) granted emergency use authorization to the Pfizer (BioNTech) COVID-19 vaccine. KSA received its first tow shipment of Pfizer (BioNTech) on December 16, 2020, and the following day, it immediately began mass vaccination campaigns for its citizens and residents. The population registration was requested by the Ministry of Health (MOH) for the vaccine via smartphone applications and online platforms (Barry and BaHammam, 2021). According to the Ministry of Health (MOH) the number of doses administered from December 17, 2021, till June 8, 2021 is 15 million.

### Literature review

Fear of COVID-19 might be a factor affecting the population's dental care during the pandemic. According to a study conducted by (González-Olmo et al., 2021) discussed the fear of COVID-19 in Madrid and whether it would lead to dental care avoidance by patients. Furthermore, Individuals will avoid going to the dental due to their high level of vulnerability to infectability and perceived germ aversion as being possibly associated with COVID-19 until an effective drug or vaccine is developed, according to Madriad study. Moreover, a study conducted by Moffat et al., (2021) was discussing the patient perceptions about professional dental services during the COVID-19 pandemic. Data for this study came from a cross-sectional survey. The study stated that majority of respondents (84%) stated that they visited the dentist at least annually. In addition, 89% respondents have been to the dental clinic in the past year and 81% chose a dentist as their primary physician. In a professional dental environment, this study provides preliminary data on patient perceptions of risk susceptibility and attitudes toward COVID-19.

Vaccination is considered one of the most significant public health breakthroughs of the twenty-first century. The COVID-19 Vaccine works to fight infection by producing antibodies and strengthen the immune system by recognizing the virus as soon as it enters the body. The vaccine is considered safe due to the successful completion of all vaccine testing stages, as well as its strong immune response and persistent antibodies. The vaccine is given by two doses injected into a muscle. However, its acceptance is varied with space, time, social class, ethnicity, and contextual human behavior. According to a web-based, cross-sectional study carried out with the snowball sampling strategy by Mohammed Al-Mohaithef et al., (2020) that discussed the acceptance of COVID-19 Vaccine in Saudi Arabia resulted that older age groups, including married individuals with a postgraduate degree or higher

(68.8%), non-Saudis (69.1%), and government employees (68.9 percent) have a strong desire to embrace the unknown COVID-19 vaccination. In a multivariate model, respondents over 45 years old and married were significantly connected to vaccine acceptability ( $p < 0.05$ ) (Al-Mohaithef and Padhi, 2020).

Another cross-sectional online survey study conducted by Eman Ibrahim Alfageeh et al., (2021) discussed the Acceptability of a COVID-19 Vaccine among the Saudi Population. According to the study, approximately 48 percent of the participants expressed a desire to be vaccinated under the assumption that the vaccine would be provided free of charge by the Saudi government. In comparison, many other countries' acceptance rates were much higher, ranging from 90% in China to 55% in Russia. The study's percentage of those willing to be vaccinated contrasted with an earlier study conducted in Saudi Arabia prior to the vaccine's availability, which found that if COVID-19 vaccine became accessible, 64% of those polled said they were willing to be vaccinated (Alfageeh et al., 2021). Thus, the aim of the current study is to evaluate Saudi populations who took COVID-19 vaccine perception and dental fear on going to the dental clinic.

## 2. METHODOLOGY

A cross-sectional survey was carried out from 18 June 2021 till 30 June 2021, primarily aiming to assess Saudi individuals toward their perception and dental fear after receiving COVID-19 vaccine. Prior to beginning the study, the proposal was submitted to the institutional ethical research committee at Riyadh Elm University, and it was approved from the IRB committee of Riyadh Elm University SRP/2021/83/501/482. The sample was limited to specific inclusion criteria.

### *Inclusion Criteria*

Saudi population

More than 18 years old

Respondents who received COVID-19 vaccine

### *Exclusion Criteria*

Missing information

Non-Saudi

Less than 18

Participants who did not take COVID-19 vaccine

After formulating and translating the questionnaire into Arabic, an anonymous, self-administered web-based survey was generated using Google Form, an online survey portal. The survey link was distributed via social media platforms such as WhatsApp, and Twitter. Once a person received the survey a letter of invitation will appear and by completing the survey the participant was counted. Prior to data collection, all participants gave their informed consent, and the subjects' confidentiality was protected throughout the study.

### **Questionnaire Details**

The questionnaire used in this survey consists of 4 sections with 32 questions. The first section included 7 questions about the participants demographic data (e.g., gender and age... etc), socioeconomic class and a question if they received COVID-19 vaccine. Winter et al., (2020) formed 7 statements about COVID-19 Fear which were altered and included in the second section. In the questionnaire, statements were rated from strongly disagree, disagree, neither agree nor disagree, agree, strongly agree (8) "I am most afraid of coronavirus-19"; (9) "It makes me uncomfortable to think about coronavirus-19"; (10) "My hands become clammy when I think about coronavirus-19"; (11) "I am afraid of losing my life because of coronavirus-19"; (12) "When watching news and stories about coronavirus-19 on social media, I become nervous or anxious"; (13) "I can't sleep because I'm worrying about getting coronavirus-19"; (14) "My heart races or palpitates when I think about getting coronavirus-19".

10-11 questions about avoiding the dental clinic, which were recently developed and validated by (Ahorsu et al., 2020; González-Olmo et al., 2021), were in the third section. Additionally, following a previous study on COVID-19 vaccine (Bai et al., 2021), 1 question was modified and utilized which was (15) Do you think covid-19 vaccines could protect you from Covid-19 after receiving COVID-19 vaccine? (yes/no/maybe); Moreover, the obtained and modified questions about avoiding the dental clinic were the following: (16) Do you think dental service is important in society and it is crucial to visit the dental clinic routinely? (yes/no); (17) Do you feel afraid to go to the dental clinic because of covid-19? (yes/no); (18) Does your fear of COVID-19 increase when you

go to: (governmental clinic/ private clinic/both); (19) did you visit the dental clinic before COVID-19 vaccine? (Yes/no) (20); if the answer is yes to the previous question (19), what is your main reason/s to continue going to the dental clinic? (You can choose more than one) (I have not completed my previous treatment, regular check-up, aesthetics reasons, pain, and other reasons); (21) if you are going to the dentist before getting COVID-19 vaccine, would you begin? (You can choose more than one) (orthodontic treatment, dental implant treatment, aesthetic treatment, endodontic treatment, gum diseases, to fill a cavity or broken teeth, emergency, doubtful cavity, others); (22) Would you visit the dental clinic after COVID-19 vaccine? (Yes/No); (23) IF your answer is No on question (22), why don't you visit the dental clinic after getting COVID-19 vaccine? (fear of covid -19/ financial issue /other); (24) IF your answer is No on question (22), How long will you maintain your decision of not visiting the dentist after getting COVID-19 vaccine ?(until all population are vaccinated/ until the whole world is vaccinated/ effective drug against covid-19 are produced / until Financial status is getting better/ others); (25) If you are going to the dentist after getting COVID-19 vaccine, would you begin? (You can choose more than one, Orthodontic treatment/ dental implant treatment/ aesthetic treatment/ endodontic treatment/ gum diseases/ to fill a cavity or broken teeth/ emergency/ doubtful cavity/ others).

The fourth section included 7 statements that were developed by Moffat et al., (2021) about participants' perception and dental fear. The statements were modified to be more applicable to participants who received COVID-19 vaccine. (26) The dentist has high risk of transmitting covid-19; (27) The dentist has high risk of getting covid-19; (28) I am afraid about contracting COVID-19 from dentist, other dental staff or patient; (29) I have sense to get covid-19 while I am in the dental chair more than going to grocery, cinema or airplane; (30) Getting COVID-19 is more dangerous to my overall well-being than not going to dental appointment or dental check-up; (31) Getting COVID-19 is more dangerous to my overall well-being than not going to dental office for dental infection or pain; (32) I am aware of governmental recommendation to dentist for suitable dental treatment during covid-19 pandemic and I have the confidence that my dentist will follow the recommendation. The answers of the previous statements include strongly agree/ agree/ neither agree nor disagree/ strongly disagree/ disagree.

#### **Validity of the Questionnaire**

During obtaining, modification and constructing the questionnaire survey, the content validation stage was the first stage of survey validation. The questionnaire was reviewed by 10 experts to assess relevance, moreover in the second stage, a pilot constructed questionnaire was distributed to determine simplicity, clarity, ambiguity and whether any further refinement of the questionnaire matrix was required before conducting the survey. Participants in a pilot test were asked to provide feedback on the understandability of specific items and general survey flow. Updates to the survey were made according to the feedback in the pilot test.

#### **Data Analysis**

The Statistical Package for Social Sciences (SPSS, Chicago, IL) version 22 was used to analyze the data. Descriptive statistics used to summarize the data. Continuous variables were expressed as the mean standard deviation, while categorical variables were expressed as mean  $\pm$  standard deviation (SD). The chi-square and independent t-tests were used to analyze categorical and continuous data, respectively. P value of  $<0.05$  was considered significant.

### **3. RESULT**

A total of 580 participants completed the online survey. Participants in the survey were asked in the first section to identify their nationality, age group, if they had taken COVID- 19 vaccine, gender (154 M, 378 F, Table 1), region that they are from, educational level, and lastly income. Non-Saudi, less than 18 years old and who did not take COVID-19 vaccine (48) were excluded. Regarding different age groups, those between 18 and 30 years old was being the most common 45.8% (263). In addition, most participants come from the central region of Saudi Arabia 82.1% (437). Most applicants had a bachelor's degree 67.5% (369). Majority of the participants 44.9% (239) had an income of less than five thousand Saudi Riyals followed by five thousand to fifteen thousand Riyal Saudi 37.6% (200).

**Table 1** Sociodemographic and COVID-19 related information of the study participants (N=580).

Demographic variables	n	%
Nationality	Saudi	574
	Non-Saudi	6
Age	Less than 18	0.0 069%
	18-30	263 45.8%
	31-45	170 29.3%
	46-60	124 21.96 %
	61-75	12 0.02%
COVID-19 Vaccine	More than 75	0 0.0%
	Yes	532 93.5%
Gender	No	37 6.5%
	Female	378 71.1%
Region	Male	154 28.9%
	North	14 2.6%
	West	33 6.2%
	East	31 5.8%
	South	17 3.2%
Education	Central	437 82.1%
	Not educated	0 0.0%
	Primary	4 0.8%
	Middle	12 2.3%
	High school	97 18.2%
Income (SAR)	Bachelors	359 67.5%
	Postgraduates	50 9.4%
	Others	10 1.9%
	< 5,000	239 44.9%
> 15,000	5,001-15,000	200 37.6%
	> 15,000	93 17.5%

### COVID- 19 Fears

In the second section which is about the fear of COVID- 19, a total of 256 of participants (48.7%) strongly disagree (SD) with the statement "I am most afraid of coronavirus-19." while the statement "It makes me uncomfortable to think about coronavirus-19." 174 of applicants (32.7%) agree (A) to it (figure 1). Furthermore, based on multivariate analysis, the two variables showed a significant relationship of fear of COVID-19 with P value<0.05 were gender and Income (figure 2). Majority of male (78.6%) disagree with the third statement regarding COVID-19 fear "My hands become clammy when I think about coronavirus-19." While (37.3%) female agree (P= 0.000). Regarding the sixth statement, "I cannot sleep because I'm worrying about getting coronavirus-19.", (72.7%) of male disagree, in contrast, (40.7%) of female agree with it (P=0.003). As well as in the seventh statement "My heart races or palpitate when I think about getting coronavirus-19:" (84.4%) of male and (74.6%) were disagreeing (P=0.014). In addition, (91.4%) of participants with an income of > 15,000 disagree with the fourth statement "I am afraid of losing my life because of coronavirus-19:" while (18.8%) of participants with income < 5,000 agree (P=0.055).

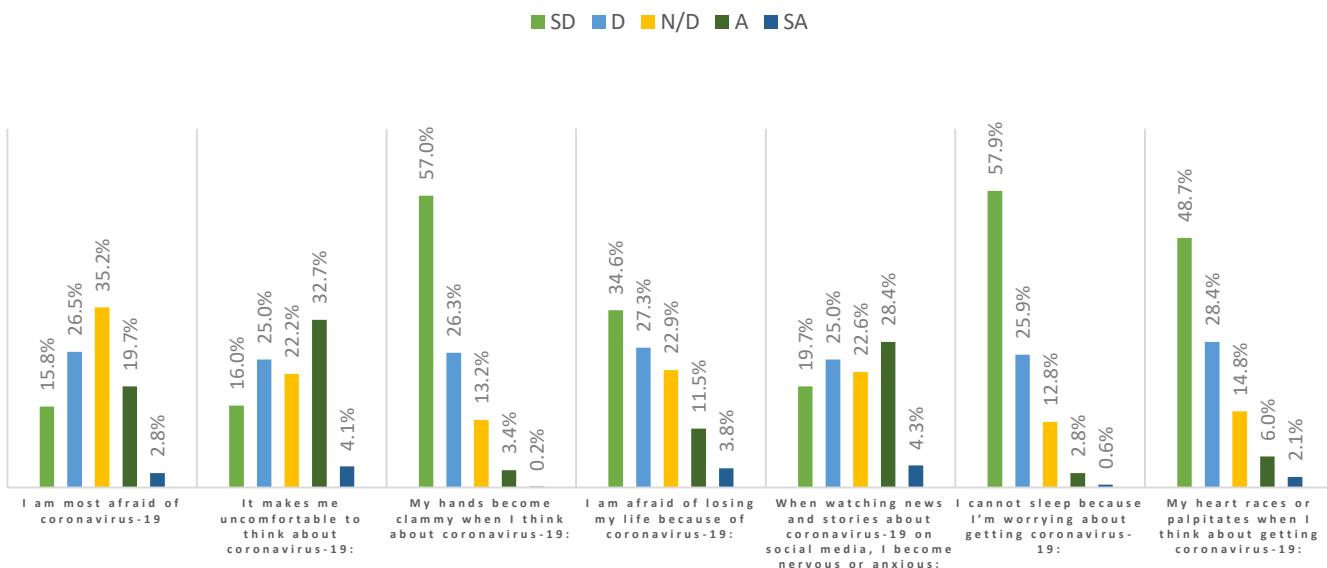


Figure 1 Participants fear-related items (N=532)

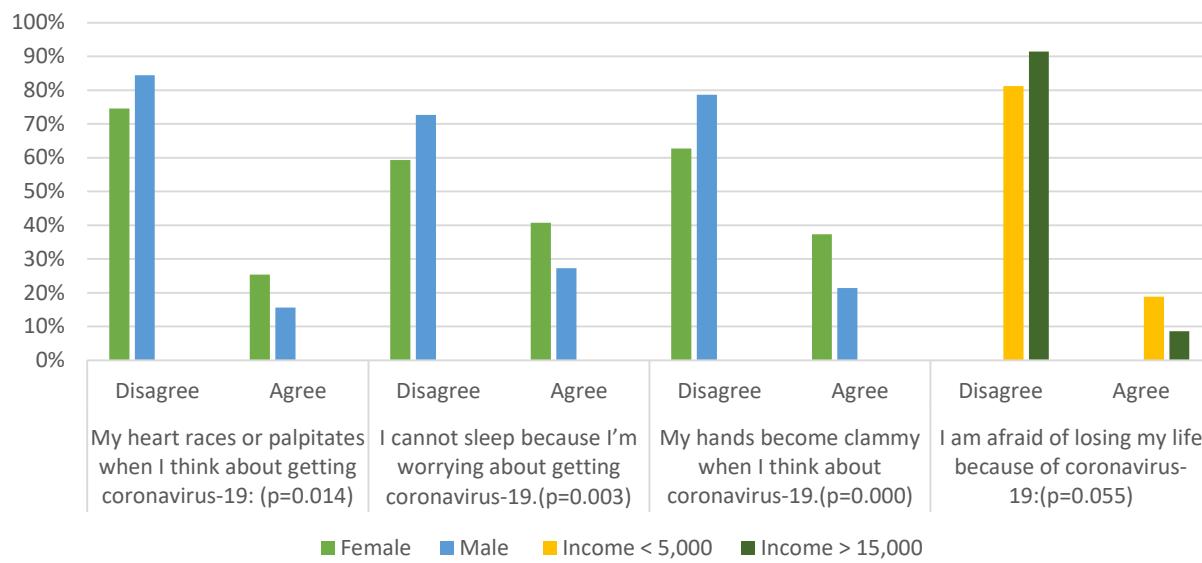


Figure 2 significant relationship were gender, fear of COVID-19 and income

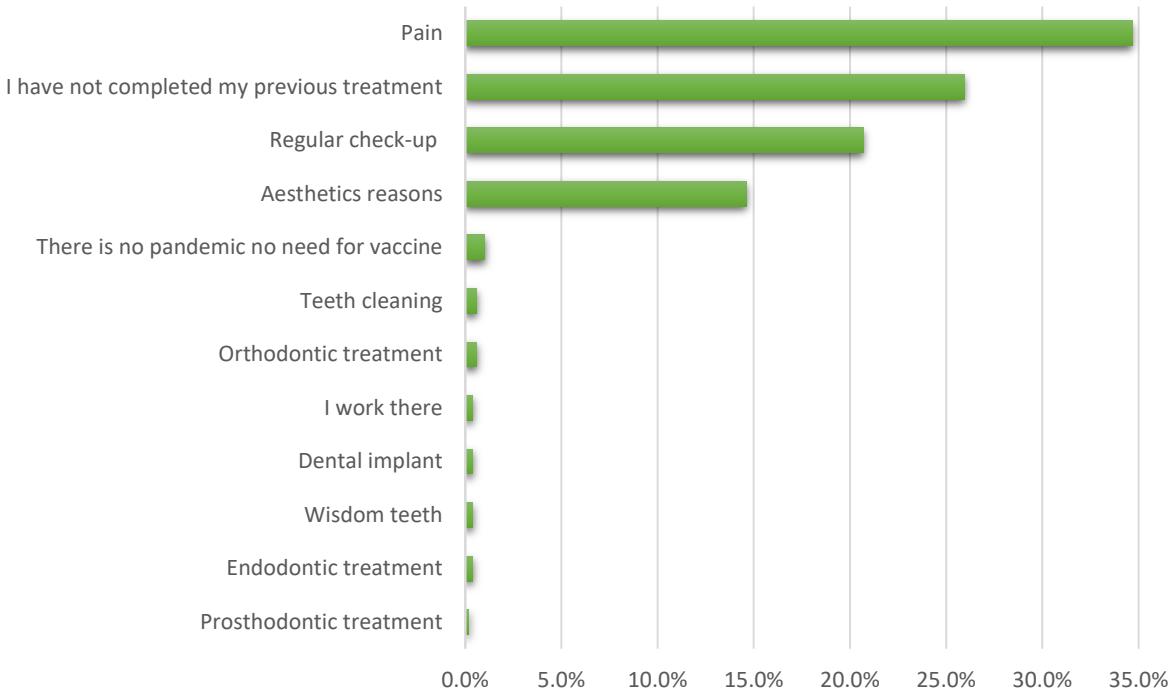
### Avoiding dental visits during the COVID-19 crisis

As shown in Table 2, 75.9% admitted to not being afraid of going to the dentist because of the possibility of catching COVID-19 (n = 404), although less than half would not go to the dentist (n = 128, 24.1%). However, 66.5% reported that fear of COVID-19 increased when visiting governmental and/or private dental clinics (n=354). 97% of the respondents think dental service is important in society and it is crucial to visit the dental clinic routinely (n = 516). The main reason of visiting the dentist before receiving COVID-19 vaccine was feeling pain. In addition to not completing previous treatment, checkup, aesthetic reasons were other factors of visiting dental clinic during COVID-19 before getting COVID-19 vaccine (n=365) (figure 3).

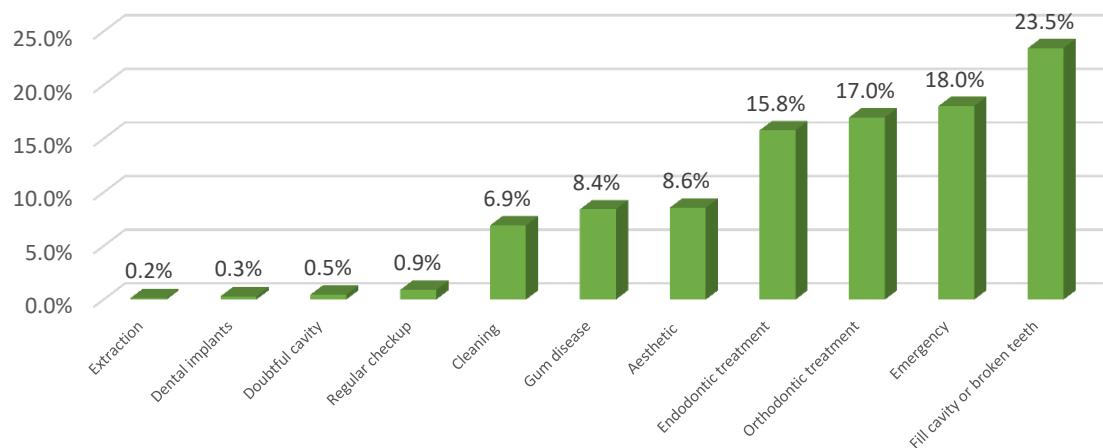
**Table 2** Questions about avoiding the dental clinic (n=532)

Items		n	%
Do you think covid-19 vaccines could protect you from Covid-19 after receiving COVID-19 vaccine ?	Yes	179	33.6%
	No	73	13.7%
	May be	280	52.6%
Do you think dental service is important in society and it is crucial to visit the dental clinic routinely?	Yes	516	97.0%
	No	16	3.0%
Do you feel afraid to go to the dental clinic because of covid-19?	Yes	128	24.1%
	No	404	75.9%
Does your fear of COVID- 19 increase when you go to?	Government	84	15.8%
	Private	94	17.7%
	Both	354	66.5%
Did you visit the dental clinic before COVID-19 vaccine?	Yes	365	68.6%
	No	167	31.4%
Would you visit the dental clinic after the COVID-19 vaccine?	Yes	499	93.8%
	No	33	6.2%
How long will you maintain your decision of not visiting the dentist after getting COVID-19 vaccine?	Until all population are vaccinated	11	33.3%
	Until the whole world is vaccinated	8	24.2%
	Effective drugs against covid-19 are produced	3	9.1%
	Until Financial status is getting better	9	27.3%
	After getting over my fear of dentist	1	3.0%
	After a year of getting the vaccine	1	3.0%

In the other hand, 93.8% went to the dental clinic after getting COVID- 19 vaccine mainly for filling cavity or broken teeth, emergency, orthodontic treatment, endodontic treatment (figure 4). In regard to those who will not visit a dental clinic after receiving COVID-19 vaccine (n=33), Majority of them 33.3% will not visit dental clinic until all population are vaccinated (n=11).



**Figure 3** main reason/s to continue going to the dental clinic before getting COVID- 19 vaccine (Responses=493)

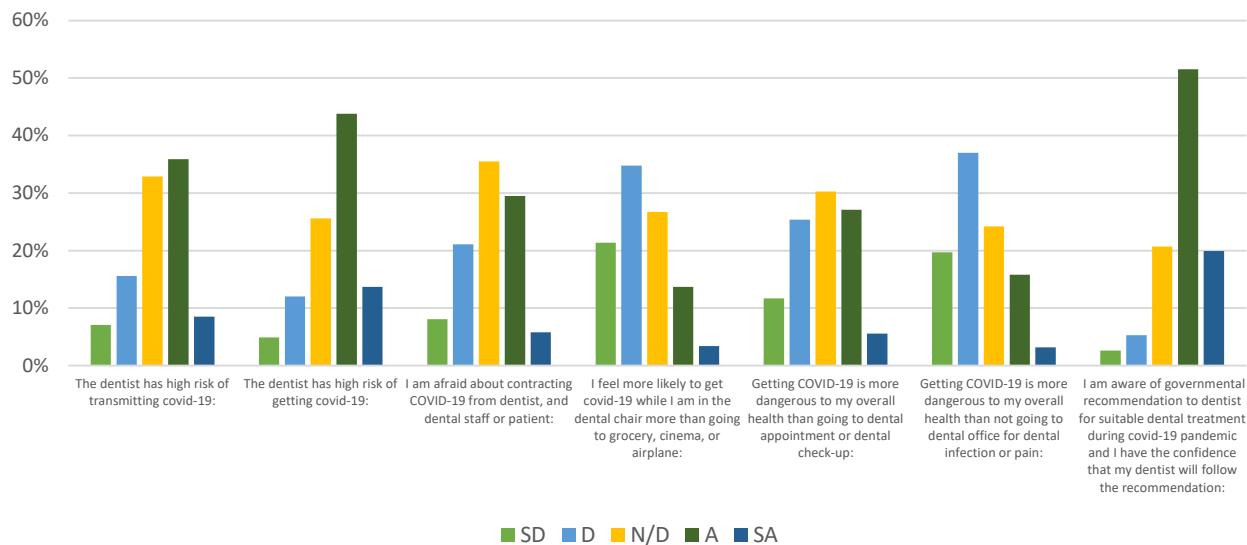


**Figure 4** If you are going to the dentist after getting COVID-19 vaccine, would you begin? (You can choose more than one) (N=532)

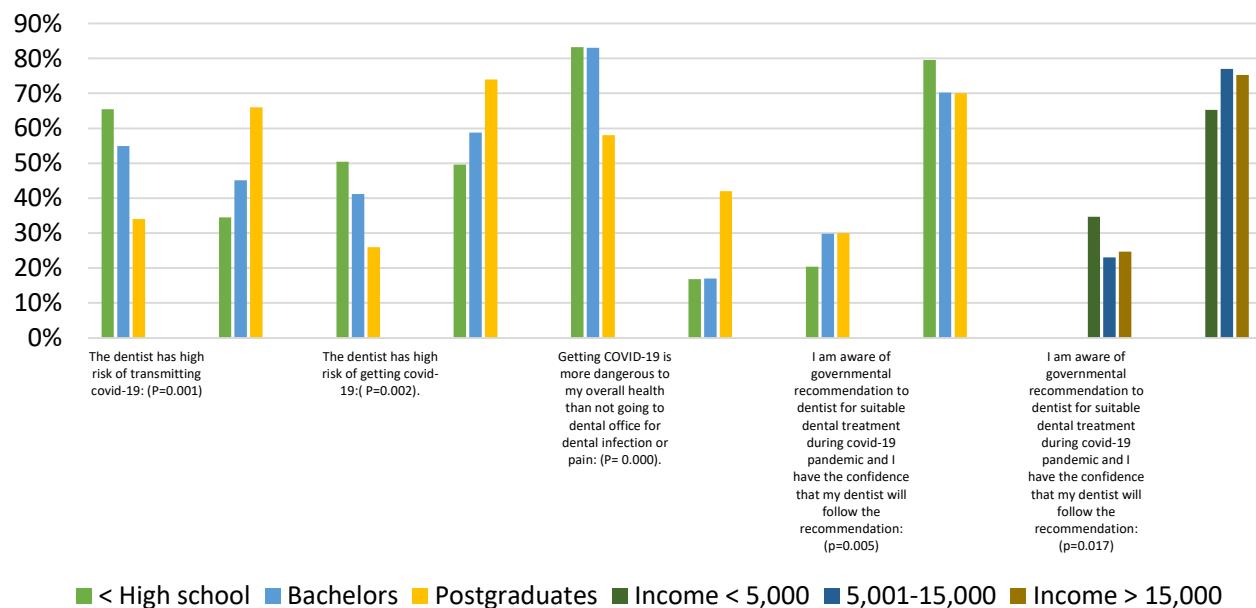
#### Perceptions of dental clinic after COVID-19 vaccine

The last section, which is perception section, most participants agree(A) that the dentist has high risk of transmitting covid-19 (35.9%) and get it (43.8%) (Figure 5). Also, they aware of governmental recommendation to dentist for suitable dental treatment during covid-19 pandemic and they were confident that their dentist will follow the recommendation (51.5%). The participants neither agree nor disagree (N/D) about afraid to contract covid-19 from dental staff (35.5%) and getting covid-19 more dangerous to their overall health than going to dental appointment (30.3%).(34.8%) disagree (D) about that they feel more likely to get covid-19 in dental clinic more than public places such as cinema. Also, (37%) disagree that affected by covid-19 more harmful to their overall health than going to dentist for dental pain or infection. Two variables showed a significant relationship with  $P = 0.05$  were education, and Income. Furthermore, participants with postgraduates' studies agree that dentist has high level of transmitting covid-19 by (66%) ( $P=.001$ ) and the dentist has high risk of getting covid-19(74%)( $P=.002$ ) (figure 6). Furthermore, (42%) of postgraduates agree that contracting covid-19 more harmful to their overall health than going to dentist for dental pain or infection

(P=0.00). In addition, (75.3%) of participants with income > 15,000 were aware of governmental recommendation to dentist for suitable dental treatment during covid-19 pandemic and had the confidence that their dentist would be following the recommendation (p=0.017).



**Figure 5** Perceptions of dental clinic after COVID-19 vaccine



**Figure 6** significant relationship were education and Income

#### 4. DISCUSSION

The purpose of the current study was to investigate the perception and dental fear on going to dental clinic among Saudi population who received covid-19 vaccine. In addition, the study included all regions of Saudi Arabia, surveyed 532 participants from different genders, ages, and income level. Our study showed that after covid-19 vaccination, women have more fear toward corona virus than men. Similarly, in 2021 a study that was conducted in Madrid, Spain clarified that woman had more fear toward infection than men (González-Olmo et al., 2021). The reason behind that could be due to those men not knowing how to express and recognize their feeling like women's do (Thomson et al., 1996). Furthermore, recent study about covid-19 investigated that gender

consider a predictor of negative affective condition like stress (Wang et al., 2020). Also, the women were stricter to hygiene measures than men; therefore they had better awareness of covid-19 risk more than men (Suen et al., 2019 and Głabska et al., 2020).

The results in this study found that most of our participants were going to dentist before the COVID-19 vaccination for pain followed by not completing previous treatment, regular checkup, and aesthetic causes. In a previous study which was conducted in the city of Jeddah, Saudi Arabia in 2020, showed that mothers were afraid to go to the dentist during the covid-19 pandemic and 69% of the participants would take their children to dental clinic for emergency only (Farsi and Farsi, 2021). Similarly, another study in Madrid, Spain found that more than half of participants during the pandemic were continue going to the dentist and 25.3% of participants were visiting the dentist because of uncompleted previous treatment (González-Olmo et al., 2021). Meisha et al., (2021) found that during covid-19 pandemic, 94.4% of people were going to dental clinic for facial trauma compromising the airway and 65.8% for cellulitis. 93.8% of surveyed participants in this research would start restorative treatment mainly for filling cavity or fracture teeth (23.5%) followed by emergency (18.0%) after getting covid-19 vaccine. María José González-Olmo et al., (2021) revealed that (83.7%) of participants would go to dentist for a lost or broken filling or tooth that the most treatment they would start with.

33.3% of respondents were not willing to go to the dentist after vaccination and would maintain their decisions until all population are vaccinated. Likewise, a study in Madrid, Spain found that majority of participants would not go to dental clinic until there is an efficient treatment produced or the disease is eradicated (González-Olmo et al., 2021). In this study 75.9% of participants did not feel afraid to visit the dental clinic because of covid-19. In contrast, a study that conducted in Italy by Martina et al., (2021) found that 45.6% of participants increase their fear to visit dental clinics because of covid-19. Deemh and Nada Farsi (2021) showed that more than one third of the participants viewed that dental clinic more dangerous than public places to contact corona virus and more than half of mothers had little or no confidence in the measures of infection controls in dental clinics. In our recent study 34.8% of participant were disagree that dental clinic is more dangerous than public places like grocery ore cinema and most of them are aware of governmental regulations to dentist during covid-19 pandemic and they have confidence that their dentist will follow the infection measures.

Martina et al., (2021) reported that most of participants were agree that getting covid-19 is more dangerous to overall health than going to dentist for dental checkup or restorative treatment while in our study 30.3% of respondents neither agree nor disagree that contracting covid-19 is riskier to overall health than attending dental appointment or check-up. Furthermore, 91.4% of respondents with income more than 15,000 were not afraid of losing their life because of coronavirus and 18.8% of participants with low income less than 5,000 were afraid. In another study that conducted in Italy by Martina et al., (2021) revealed that participants with low economic status perceived themselves like they are more susceptible to getting covid-19 and they have a higher chance of having conditions related with increased risk of diseases from covid-19.

In this research paper, certain limitations have been encountered in terms of sample collection, gender variables and survey distribution methods. Furthermore, time was the main limitation for sample collection due to the rapid changes that happened during the pandemic, which led to gender variables. A web-based survey was the only method to participate that created an obstacle in the implementation of better communication between researchers and participants.

## 5. CONCLUSION

Concerns about COVID-19 could have an impact on people's dental care during the epidemic. A cross-sectional study was performed from June 18 to June 30, 2021, with the primary goal of assessing Saudi citizens' perceptions and dental fears after receiving the COVID-19 vaccine. Consequently, after receiving the vaccination, people's fear levels decreased, and they started visiting dental clinics for reasons other than pain or an emergency. Participants' perceptions were influenced by their educational level and financial status. Although individuals with postgraduate education generally think that the dental office follows a strict disinfection protocol, the dentist can acquire and spread infections such as COVID-19.

## Acknowledgment

We would like to express our thanks to our families and all the participants who contributed to the study.

## Authors Contribution

Afra El Rashid: Conceptualization, Supervision, Project Administration, Validation

Hadeel Albarkheel: Consent Forms Writing, Question Matrix Development, Sample Size Collection, Validation, Data Collection, writing (Abstract, Methodology and Result sections and Figures)

Sadeem Abahussain: Consent Forms Writing, Sample Size Collection, Validation, Data Collection, writing (Introduction and Discussion sections)

Fai Abahussain: Idea of the Study, Consent Forms Writing, Question Matrix Development, Sample Size Collection, Validation, Data Collection, writing (Abstract and Discussion sections)

Arwa Alhassoun: Consent Forms Writing, Sample Size Collection, Validation, Data Collection, writing (Literature review and Conclusion section)

### Funding

This study has not received any external funding.

### Conflict of Interest

The authors declare that there are no conflicts of interests.

### Data and materials availability

All data associated with this study are presented in the paper.

## REFERENCES AND NOTES

1. Ahorsu DK, Lin CY, Imani V, Saffari M, Griffiths MD, Pakpour AH. The fear of COVID-19 scale: development and initial validation. *Int J Ment Health Addict* 2020; 1-9.
2. Alfageeh EI, Alshareef N, Angawi K, Alhazmi F, Chirwa GC. Acceptability of a COVID-19 vaccine among the Saudi population. *Vaccines (Basel)* 2021; 9(3):226.
3. Al-Mohaithef M, Padhi BK. Determinants of COVID-19 vaccine acceptance in Saudi Arabia: a web-based national survey. *J Multidiscip Healthc* 2020; 13:1657-1663.
4. Bai W, Cai H, Liu S, Liu H, Qi H, Chen X, Liu R, Cheung T, Su Z, Ng CH, Xiang YT. Attitudes toward COVID-19 vaccines in Chinese college students. *Int J Biol Sci* 2021; 17(6):1469-1475.
5. Barry M, BaHammam AS. COVID-19 vaccine in the Kingdom of Saudi Arabia: a true operation warps speed. *J Nat Sci Med* 2021; 4:92-8
6. Farsi D, Farsi N. Mothers' knowledge, attitudes, and fears about dental visits during the COVID-19 pandemic: a cross-sectional study. *J Int Soc Prev Community Dent* 2021; 11(1):83-91.
7. Felemban RM, Tashkandi EM, Mohorjy DK. The willingness of the Saudi Arabian population to participate in the COVID-19 vaccine trial: a case-control study. *J Taibah Univ Med Sci* 2021; 16(4):612-618.
8. Głąbska D, Skolmowska D, Guzek D. Population-based study of the influence of the COVID-19 pandemic on hand hygiene behaviors—polish adolescents' COVID-19 experience (PLACE-19) study. *Sustainability* 2020; 12(12):4930.
9. González-Olmo MJ, Delgado-Ramos B, Ortega-Martínez AR, Romero-Maroto M, Carrillo-Díaz M. Fear of COVID-19 in Madrid. Will patients avoid dental care? *Int Dent J* 2021; S0020-6539(21)00032-0.
10. Guo H, Zhou Y, Liu X, Tan J. The impact of the COVID-19 epidemic on the utilization of emergency dental services. *J Dent Sci* 2020; 15(4):564-567.
11. Martina S, Amato A, Faccioni P, Iandolo A, Amato M, Rongo R. The perception of COVID-19 among Italian dental patients: an orthodontic point of view. *Prog Orthod* 2021; 22(1):11.
12. Meisha DE, Alsolami AM, Alharbi GM. Social determinants of seeking emergency and routine dental care in Saudi Arabia during the COVID-19 pandemic. *BMC Oral Health* 2021; 21(1):212.
13. Moffat RC, Yentes CT, Crookston BT, West JH. Patient Perceptions about Professional Dental Services during the COVID-19 Pandemic. *JDR Clin Trans Res* 2021; 6(1):15-23.
14. Suen LKP, So ZYY, Yeung SKW, Lo KYK, Lam SC. Epidemiological investigation on hand hygiene knowledge and behaviour: a cross-sectional study on gender disparity. *BMC Public Health* 2019; 19(1):401.
15. Thomson WM, Stewart JF, Carter KD, Spencer AJ. Dental anxiety among Australians. *Int Dent J* 1996; 46(4):320-324.
16. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, Ho RC. Immediate psychological responses and associated factors during the initial stage of the 2019 Coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health* 2020; 17(5):1729.
17. Winter T, Riordan BC, Pakpour AH, Griffiths MD, Mason A, Poulgrain JW, Scarf D. Evaluation of the English Version of the Fear of COVID-19 Scale and Its Relationship with Behavior Change and Political Beliefs. *Int J Ment Health Addict* 2020; 1-11.